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Whither China?

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We begin by sketching what China's economy will look like in 2025, two decades from now. It is desirable to do this quantitatively, both to indicate the practical possibilities open to China and to demythologize statements that suggest large magnitudes – "the next economic superpower"—without specifying what they are. Of course, no one really knows what China will look like in two decades, and indeed a range of outcomes is possible. In its recently released "Global Scenarios to 2025" the Royal Dutch/Shell (oil) Company allows China's growth to vary from 6.7 to 8.4 percent a year, depending on the nature of the external (world) economic and political environment. As we shall see, others would allow the possibility of even lower growth rates. For sake of concreteness, I will build here upon the 2025 projections of the US Department of Energy, yielding a growth in dollar terms of 7.2 percent a year. They will not necessarily be correct, but they represent an internally consistent projection that is reasonably optimistic about China's growth, and ties that growth to projections of energy demand, an important source of interaction between China and the rest of the world, both in economic and in environmental terms. We can then address the implications of this growth, and take excursions from the baseline projection.

Table 1 presents the projected GDP and population of China, Japan, and the USA in 2025, compared with 2000. GDP is reported in US dollars of 2005 (adjusted from 1997 in the original source). We need to allow for some real appreciation of the Chinese currency (rmb) relative to the dollar over the next two decades. I allow, somewhat arbitrarily, one percent a year. (The yen appreciated 0.8 percent a year against the dollar over the period 1950-1975, although all this appreciation was concentrated in the period 1971-1975.) This would bring China's GDP in 2025, measured in dollars, to $7.4 trillion, almost equal to Japan's projected GDP in that year (it would be larger if the appreciation of the rmb is greater than one percent a year), and amounting to about ten percent of gross world product. It would be one-third the projected size of the US economy in that year. China's population will have grown to 1.4 billion, while Japan's population will have declined to 120 million. The USA will have grown to 350 million, all figures drawn from medium projections by the US Census Bureau.

Several observations can be made about these projections. First, they assume that China will grow at 7.2 percent a year over the period, in dollar terms. This is only slightly lower than its 7.4 percent annual growth rate over the period 1980-1998 as calculated by the economic historian Angus Maddison, but considerably below the 9.9 percent official growth figures, and below actual growth in the past few years. The drop is partly due to a significant drop in the growth rate of the population, to 0.5 percent a year, and an even sharper drop in the growth of the potential labor force, as children born under the one-child policy reach adulthood. In other words, China will be doing well, meeting its official aspiration of quadrupling GDP when measured in dollars (although not quite when measured in rmb). Japan is assumed to grow at 1.7 percent a year, despite its drop in population and even sharper drop in labor force; the USA is assumed to grow at 3.0 percent – lower than in recent years – with population growing at 0.8 percent a year, also lower than in recent years when immigration is included, as it should be.

Second, however, China remains a relatively poor country, with GDP per capita only about one-twelfth that of Japan and the USA (the gap will be considerably lower in terms of purchasing power parity, on which more below). But Chinese will be five times richer than they were in 2000, and all Chinese under the age of fifty will have grown up in a period of rapid economic growth and increasing prosperity.

Third, the dynamics of population change is quite different in the three countries. America's population continues to grow, albeit at a somewhat slower rate. The number of 20-24 year-olds, the group that is just leaving its education and entering the labor force, will grow by 0.6 percent a year to 2025. The same age group in Japan, in sharp contrast, is expected to decline at 1.4 percent a year, so that by 2025 this age group will be only 70 percent as large as it was in 2000. China is in between, with the 20-24 year-old group declining at 0.7 percent a year, down 16 percent from 2000. All three countries have aging populations due to increased longevity, but it is most rapid in Japan because of low natality. China will experience a significant drop in total population after 2035.

A fourth observation is that China will be only about one-third the size of the USA in terms of economic output, but roughly equal to the size of the USA in 1988. If it chooses, China will thus have considerable scope for internationally relevant policies, whether in military expenditure or in foreign aid, provided sufficient tax revenues can be raised. (In 1988 Americans paid in taxes 29 percent of their GDP, compared with 19 percent in China in 2003.)

One sometimes sees much larger numbers, even suggestions that China's economy could be larger than that of the United States by 2025. These presentations compare GDPs using so-called purchasing-power parity conversion rates, rather than market exchange rates. Purchasing power parity (ppp) is necessary when comparing standards of living between countries, since an important part of a family's expenditures is on locally produced goods and especially labor services, and these are much cheaper in poor countries, reflecting lower overall productivity. In terms of ppp, China's GDP in 2002 was 4.6 times what it was at market exchange rates, and already 70 percent larger than Japan's economy, whereas at market exchange rates Japan's GDP was 3.5 times that of China. There are however two serious problems with using ppp-based GDP for these comparisons.

The first is conceptual. China is tied to the world economy at market prices mediated by market exchange rates, not ppp. All trade in goods and services and foreign investment takes place at market exchange rates, and even local goods and services are linked to traded goods by the opportunity cost of land, labor, and capital – factors that could earn more in the trade sector will move there, as circumstances permit. China is not a market economy in every respect, but prices are largely determined freely, influenced by the prices of traded goods. These days some argue that the rmb is "under-valued," and suggest that it should be appreciated by as much as 25 percent. Such an adjustment, should it occur, would close only a small portion of the large difference between the existing exchange rate and the so-called ppp rate. As noted above, an allowance for appreciation by one percent a year, 28 percent over 25 years, has been assumed in the projection used here.

The second problem is practical. China's ppp exchange rate is based on fragile US-China price comparisons made in the mid-1980s for roughly 300 goods and services, some of which involved heroic assumptions to make them comparable. Moreover, the necessarily arbitrary choice of weights to add up these goods or services makes a large difference to the final result, by a factor of three.

For geo-political or geo-economic purposes, market exchange rates, perhaps smoothed over several years, provide the relevant basis for comparing market economies. The choice makes a big difference: China's economy is already 70 percent larger than Japan's when calculated at ppp; but only slightly more than one quarter of Japan at market exchange rates. China's ability to trade or invest abroad is determined by market exchange rates, not by ppp. China demonstrated the importance of market exchange rates even in the military arena when it purchased military aircraft and ships from Russia, presumably at Russia's export prices, despite a known strong preference for producing military equipment at home. In effect, China indicated that it could not produce comparable weapons at competitive cost domestically.

A larger China of course has implications for the world economy. Demand for food, energy, and other resources will be much higher. By the same token, the supply of manufactures and other goods and services will be much higher. Of special interest to Japan, indeed to the world, will be China's demand for energy, especially coal (with its tendency to pollute) and oil (with its limited domestic supply). On the Department of Energy projection, China's total demand for energy will grow at 3.5 percent a year to 2025, as opposed to 1.4 percent in the United States and 0.8 percent in Japan. These growth rates allow for continued increases in energy efficiency, but no major breakthroughs during the next two decades. By 2025 China will be consuming 12.8 million barrels of oil a day, over twice Japan's consumption, and nearly half that in the United States. Coal consumption, mainly to generate electricity, will more than double to 2.8 billion tons, with important implications for air pollution, absent drastic improvements in the way coal is consumed, and for emissions of carbon dioxide, an important greenhouse gas. These figures imply that energy efficiency in China remains much lower than in the USA and especially than in Japan, despite significant improvement. China will have great demand for infrastructure of all kinds – power, transport, housing, and urban services as the country becomes much more urbanized.

With a further quadrupling of China's GDP, the composition of both output and demand will of course change significantly. The share of agriculture in output and employment will continue to decline, while that of manufacturing and especially services will rise. Manufacturing will move into more technologically sophisticated products, as large numbers of trained engineers enter the labor force. Exports of manufactured goods will continue to rise, although at a slower rate as Chinese products encounter increasing market resistance and as poorer countries compete with increasing success at producing low-skill labor-intensive products.

There will be more intensive competition in the US market from Chinese products that require much labor in assembly, including skilled labor, for example in household appliances and perhaps even automobiles. This competition will meet some selective resistance, but in the end will generally be accepted. US employment in manufacturing is already below ten percent of the labor force (even while manufacturing production continues to rise, reflecting advances in productivity), while all American consumers will benefit from less expensive goods from China. And China's growing market will provide continually increasing opportunities for the export of American goods and services.

By 2025 China’s imports will amount to perhaps $1.5 trillion, far greater than Japan’s but less than half of US imports and markedly less than imports by the European Union. Thus China will be a major market for the products of many countries, roughly on the scale of the United States at present.

China’s transition period for full compliance with WTO rules and the terms of China’s WTO accession will expire at the end of 2006. Compliance is not likely to be complete by then, however, since many commitments run strongly against well-established Chinese practices, and Beijing is unable to control the entire country except on a few issues of the highest priority. But compliance will gradually take hold in the coming decades, and by 2025 China is likely to be much more transparent and rule-bound, at least in the arena of commercial activity, than it is now. Foreign businessmen will play a significant role in that transformation, and not incidentally will provide an important source of information to the central government, independent of official channels, on what is happening around the country.

By 2025 completion of the Doha Round of trade negotiations, at least if Japan can make some serious concessions in agriculture, will have been in the distant past and the ten-year transition period following completion of multilateral trade negotiations will have concluded, so the trading world of 2025 will be governed by the outcome of the Doha Round, even though a post-Doha round of trade negotiations may have been launched. If the aspirations of APEC of several years ago are realized (the target date was 2020), world trade would be completely free of tariffs and other restrictions on imports. The discriminatory features of the preferential trading arrangements which are currently proliferating rapidly would have been obliterated, or at least greatly attenuated, by such a development.

China has played a conservative, low-key role in international economic organizations, and that is likely to continue because the evolving status quo has served China's interests well. As noted, China will provide a huge domestic market for imports, giving the rest of the world a great interest in China's trade policy and practices.

All the above assumes China stays on its current growth path, which in turns assumes continued peace and prosperity in the world, so trade can continue to grow unimpeded. Even so, China's internal requirements remain formidable. It must grow the private and township sectors enough to compensate for declining employment in the state-enterprise sector. To close many loss-making enterprises it must create a social safety net (unemployment compensation, pensions, health care) for urban employees. It must deal with rapid growth in demand for water, waste disposal, and new housing in urban areas. It must greatly improve agricultural productivity, partly through large and more efficient irrigation projects, partly through improved seeds and techniques of farming. And it must address the widening regional inequalities of growth and income, in part through significant investments in infrastructure within and to the central and western parts of the country.

A team at the RAND Corporation, responding to a request by the US Defense Department, produced in 2003 a study of various adverse scenarios, along with estimates of their negative impact on Chinese growth over the period 2005-2015. The possible adversities cover a socially disruptive increase in unemployment, increased corruption, a major epidemic (focused on AIDS, written before SARS), failure to solve the emerging shortage of water in northern China, a major disruption in world oil supplies, a domestic financial crisis, a sharp decline in inward foreign direct investment, and a military conflict over Taiwan or elsewhere. Others are imaginable, for example a severe world recession or a significant reversion to protectionism in Europe and the USA, neither of which is likely but both are possible. Each scenario has an adverse impact on China's growth ranging from 0.3 to 2.2 percent a year on the assumptions made in the study, lowering China's GDP by 3 to 24 percent by 2015 from an unspecified base line. Of course, none of these adversities may materialize, a possibility which the Rand authors consider implausible. If one occurs, others may be triggered, at least in part, because of interdependencies among them. Good luck as well as skillful management will be required for China to continue on a course of sustained growth.

Continued rapid growth in China requires peace and prosperity in the rest of the world. China thrives on a benign international environment, and China's current leaders understand that well. Legitimacy of the Chinese Communist Party (CCP) depends on delivering economic prosperity at home, as does the "peaceful rise" of China in the society of nations. But China will have at least two sets of new leaders by 2025. If the leaders of 2025 are around 60 years in age, they will have been born around 1965 and reached college age in the radically changed environment of 1985. Their parents will have been the victims, or in a few cases the perpetrators, of the Cultural Revolution.

Political evolution in China is likely to proceed slowly. Current leaders and their likely successors will remain preoccupied with maintaining political and social stability, and the political monopoly of the (admittedly much transformed) Communist Party. They see opening up to free discourse, e.g. through a truly free press and contested elections, as potentially unleashing destabilizing forces. Yet increased "democratization" is part of their program. They are likely to experiment with a variety of techniques for holding officials more accountable to the local populace, and some of this may involve carefully constrained and monitored elections, as in many villages today. If these experiments are successful, they may be gradually extended in scope. The notional model is likely to be Singapore, where the forms of western democracy have been introduced, but where in fact a single paternalistic party has governed, with wide public acceptance, for forty years.

Latent nationalism in China is very high, and indeed is fostered by the educational system. Not only are Chinese taught that Taiwan (and the South China Sea) 0has been part of China for centuries, regardless of the views of the 23 million people who live there, but they are raised to believe that China suffered terrible humiliations and indignities at the hands of Europeans and Japanese (with Americans thrown in for good measure) for century ending in 1949, when “China stood up.” These are reflected in middle school textbooks, which still today distort history through selective omissions (e.g. Chinese students are not told that North Korea invaded South Korea in June 1950, starting the Korean War which China later joined in defense of North Korea) and tendentious adjectives.

One could imagine scenarios under which internal obstacles slow Chinese growth and violate high expectations of the Chinese public, leading to domestic unrest threatening the CCP regime. Contemporary leaders may then trump up external factors, perhaps even provoking them, to arouse the latent nationalism in order to rally support for the regime to stand up to the external “threats” or “indignities.” Japan and/or the United States are the most likely targets of such, but it could also involve Russia, depending on how that country and polity evolve in the coming decades, or even India. Russia and Japan are seen as traditional adversaries; problems with the USA arise over Taiwan and general American influence in the western Pacific. Such a turn of events would likely damage further China’s economic prospects, since foreign investment and even foreign markets would be put at risk. Sensible leaders will thus be very cautious about unleashing Chinese nationalism; but that is no guarantee that it will not occur. Germany in 1914 and Argentina in 1982, to name only two, took on external “adversaries” in ways clearly not in each country’s economic interests.

The fourth of Deng Xiaoping’s Four Modernizations was to modernize the People’s Liberation Army (PLA). Anomalously, the PLA is still an instrument of the Community Party, and it reports mainly to the CCP. In the early 1980s the PLA was huge in manpower, archaic in equipment, doctrine, and training. China has greatly reduced its size (although it remains the largest military in the world in terms of manpower), and plans further reductions. It has acquired more modern weaponry from Russia, especially for the navy and air force, although with technology of the 1970s that weaponry is still well behind the frontier of modern weaponry. The primary task of the PLA is still to preserve internal stability, although that assignment lies formally now with the People’s Armed Police, not with the PLA. The PLA, like militaries around the world, has been a close student of recent military conflicts in the Middle East, Iraq, and Kosovo. It recognizes a need to change its structure and doctrine in order to be able to fight a “high tech war,” but remains a long distance from achieving the transformation. Presumably by 2025 it will have done so.

China in recent years has settled its numerous border disputes with all of its many neighbors, except for India. It still has unresolved territorial disputes at sea with Japan to the east and with several southeast Asian countries in the South China Sea, although it has proposed in the latter case to exploit potential undersea resources cooperatively without formally resolving the territorial disputes. Its strategic aim is to control the seas around China, especially the Strait of Taiwan. Its military aim is to be able to act quickly if necessary to a provocation by Taiwan, and to keep the US Seventh Fleet and other forces at bay with threats from missiles and submarines. None of this is surprising. Military modernization is thus on the agenda, and the PLA commands a growing defense budget, but one has the impression it is not the top priority of the current leaders and that it is being pursued diligently but without urgency.

As China grows, its dependence on imported materials will also grow. China has ample coal and is rich in some other minerals, but in general China is not a resource-rich country and it has already become dependent on imports of iron ore to feed its voracious demand for steel, of copper, and especially of oil, where domestic exploration has so far produced only disappointing results. China is also a large absorber of foreign technology, and so far has demonstrated only limited capacity to generate new indigenous technology. That may change with the large increase in college graduates, including engineers, combined with greater incentives and fewer inhibitions to think creatively than has characterized China in the past – another major challenge.

Growing dependence on critical imported materials, including food and feed grains, creates new vulnerabilities for China. The clearest and most notable concerns oil. On the US Department of Energy’s baseline projection, China will consume 12.8 mbd of oil in 2025, up 4.0 percent a year from the 4.8 mbd consumed in 2000. China was a small net exporter of oil in the early 1990s; by 2025 it will import over 9 mbd. China also desires to increase its consumption of natural gas, including liquified natural gas (LNG), for environmental reasons – to replace coal in the home and workplace, and even to generate electricity in places close to the coast (or gas pipelines) and far from coal mines.

Chinese leaders are of course aware of this growing dependence and vulnerabilities it creates, both to physical and to market disruption. China has aggressively pursued oil exploration around the world, with a strong emphasis where possible on equity oil. China is engaged with Iran and Sudan, and has had discussions with Russia, Venezuela, Canada, and elsewhere. China's oil firms have invested in Canada. It has expressed an intention to build a pipeline from Kazakhstan, and an interest in building one from Russia, to mitigate its growing dependence on oil imported by sea, and plans to create a strategic stockpile of oil. As noted above, it would like to develop the hydro-carbons of the South China Sea cooperatively, without necessarily resolving the territorial disputes.

At the end of the day, then, practical considerations of high dependence on imports of critical materials, especially but not only oil, combined with a navy of limited capacity and no naval tradition since the 15th century, are likely to shape Chinese behavior in the international arena in a peaceful and even strongly cooperative spirit. Concretely, China has the same interest as Japan and the United States in a stable Persian Gulf region, from which most of the world's incremental oil must come over the next 20 years.

An alternative scenario is possible but implausible. Like Germany before 1914 and in 1941 (with the invasion of the Soviet Union), and Japan in the 1930s, China's sense of vulnerability regarding critical materials might lead to an aggressive policy of gaining control over such materials. In China's case, that points mainly to East Siberia, lightly populated and defended by Russia; or to acquisition through sponsored political coups in southeast Asia, leading to governments that are in effect satellites of Beijing – although absent significant new discoveries the latter course would not by itself assure sufficient oil for China's needs. In the long run, China might attempt to build a blue water navy (and collateral air support) capable of challenging the US Navy, not only in the western Pacific but also in the Indian Ocean, as Japan did with brief but transitory success in the 1930s. But that would require several decades of construction and naval training.

China is more likely to consider these alternatives, the more hostile is the political environment in which it must operate. Those who see China as a "threat" and act accordingly may well be making a self-fulfilling prophecy.

Table 1

	GDP (trillion 2005 dollars)		Population (millions)	
	2000	2025	2000	2025
China	1.30	7.40	1275	1445
Japan	5.09	7.61	127	120
USA	10.87	21.90	276	350

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